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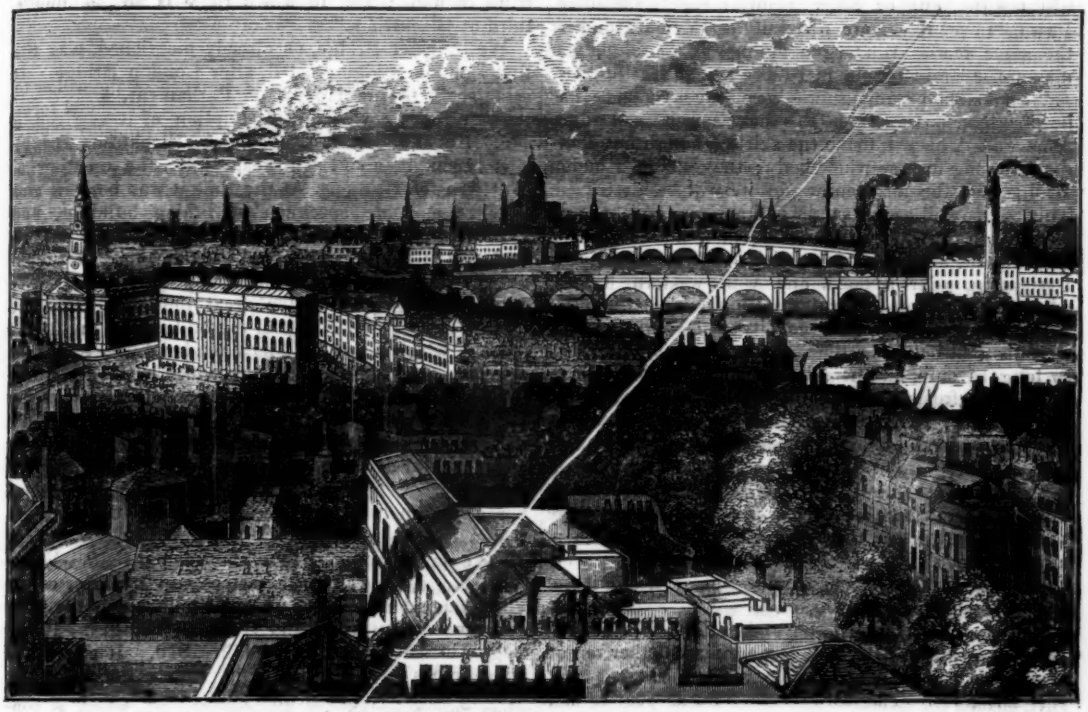
A LOOKING-GLASS FOR LONDON.—No. XXVI.

THE BRIDGES OF LONDON.



[London, from the York Column.]

OLD London Bridge, the ruins of which were clearing away about the time the 'Penny Magazine' was commenced *, was for six centuries the only bridge across the Thames at London. It was begun, according to Stowe, in 1176, and Westminster Bridge, the next that was built, was not opened till 1748. A curious volume, termed the 'Chronicles of London Bridge,' has been written concerning the history of this far-famed structure. The bridge was built of stone, but it was covered with houses, most of them of wood, which were frequently destroyed by fire. After Westminster Bridge was opened, the houses of London Bridge were removed, under authority of acts of Parliament; and the bridge itself was greatly widened and improved. It continued a kind of convenient nuisance, perpetually requiring to be propped up and repaired, but strong in the attachment and antiquarian veneration which its old eventful associations created, till 1831; and now, unless we except the Monument, there is scarcely a landmark left by which to indicate where it once stood.

We now count six bridges across the Thames at London; eight, if we go above Vauxhall, and include the suburban bridges of Battersea and Putney. Putney Bridge, a clumsy wooden structure, was built between 1726 and 1729; its arches are the Scylla and Charybdis of amateur boatmen on the Thames, and, like the arches of Old London Bridge, are not unfrequently the cause of loss of life to the careless or inexperienced.

* See the first Supplement to the 'Penny Magazine' in vol. i.

We mention Putney Bridge to introduce a curious debate in the House of Commons; for otherwise the bridge is not strictly a London one, and does not come fairly within the present article.

On the 4th of April, 1671, a motion was made in the House of Commons for the second reading of a bill for erecting a bridge at Putney. The following outline of the debate on the occasion is taken from the first volume of the Hon. Mr. Grey's Collection; the author was a member of the House at the time:—

"Tuesday, April 4.—A bill for building another bridge over the river Thames, from Putney, was read.

"Mr. Jones, member for London.—This bill will question the very being of London: next to the pulling down of the borough of Southwark, nothing can ruin it more. All the correspondences westward, for fuel and grain and hay, if this bridge be built, cannot be kept up. The water there is shallow at ebb; the correspondences of London require free passage at all times, and if a bridge, a sculler can scarce pass at low water. It will alter the affairs of watermen, to the king's damage and the nation's. Thinks the bill unreasonable and unjust.

"Mr. Waller [the poet.]—As for the imposition laid by this bill, men may go by water, if they please, and not over the bridge, and so pay nothing. If ill for Southwark, it is good for this end of the town, where court and parliament are. At Paris there are many bridges; at Venice hundreds. We are still obstructing

public things. The king cannot hunt but he must cross the water. He and the whole nation have convenience by it.

"Sir Thomas Lee.—This bill will make the new buildings at this end of the town let the better, and fears the bill is only for that purpose.

"Colonel Birch.—Finds it equal to men whether it does them hurt or they think it does them hurt. Where a cart carries something to the city, it usually brings something home; and they that bring provision hither will fetch back, but will not go to the city to fetch it.

"Mr. Secretary Trevor.—No law can be made but will transfer one or other inconvenience somewhere. Passages over rivers are generally convenient; and by the same reason you argue against this bridge, you may argue against London Bridge and the ferries.

"Sir William Thompson.—When a convenience has been so long possessed as this has been, it is hard to remove it. This will make the skirts (though not London) too big for the whole body; the rents of London Bridge, for the maintenance of it, will be destroyed. This bridge will cause sands and shelves, and have an effect upon the low bridge navigation, and cause the ships to lie as low as Woolwich; it will affect your navigation, your seamen, and your western barges, who cannot pass at low water. Would reject the bill.

"Colonel Stroude.—In no city where bridges are, were they all built at a time. No city in the world is so long as ours, and here is but one passage for five miles. In frosts provisions may stop, and in case of any mutiny, passages may be so stopped by water, as a correspondence cannot be held any way but by this convenience.

"Mr. Boscawen.—If a bridge at Putney, why not at Lambeth, and more? And as for Paris, where there are so many bridges, there is no use for watermen at all; and the same reason that serves Paris may serve London. Neither Middlesex nor Surrey desire it: at best it is but a new conclusion.

"Sir John Bennet.—Says the Lord Mayor and Aldermen did agree to it, if it were for no other reason than to be secured from a bridge at Lambeth.

"Mr. Love.—The Lord Mayor of this year is of a different opinion from him of the last year. If carts go over, the city must be destroyed by it. It is said that it encourages but a few ferry-men, though in truth it does many. He hears that it must be of timber, which must be vast, and will so hinder the tide, that watermen must stay till it rises. When between the bridges the streams are abated, in time no boat will pass, and the river will be destroyed totally for passage, it being already full of shelves.

"Sir Henry Herbert.—This looks like a monopoly: several of these projects were in the late King's time, but rejected, because the Londoners and the adjacent countries would be prejudiced by it. It is a matter of great concernment, and too thin a house; and now to receive a bill of this nature would be thought strange.

"The bill was rejected by 67 to 54."

The editor of 'Grey's Debates' has the following note written about sixty-five years ago, on the preceding subject:—

"Experience has at length convinced us of the weakness and fallacy of the objections here raised against another bridge (though private interest it may be presumed was the principal motive), since, not to mention the many bridges that have been raised farther up the river, this metropolis boasts, without any of these inconveniences, not only a bridge at Putney, but one at Westminster, where use and convenience go hand in hand; and to which there is now adding a third at Blackfriars."

Westminster Bridge, as already mentioned, was the first London bridge erected, after London Bridge. It is adjacent to the Houses of Parliament, and Westminster Hall: a view and description of it is given in No. 27 of the 'Penny Magazine.' Blackfriars Bridge was begun in about ten years after the opening of Westminster Bridge. At the time it was built it was thought a noble specimen of bridge building, and it was so unquestionably, until such engineers as Telford and Rennie carried forward the art. Situated not far from Fleet Street and Ludgate Hill, it is, like London Bridge, one of the great thoroughfares of the metropolis. The declivity of the bridge, and the friable stone of which it was built, have rendered necessary very extensive alterations and repairs, which have been carrying on within these last three years, and of which some account is given in No. 275 of the 'Penny Magazine.'

Southwark and Waterloo Bridges—the first a fine structure of cast-iron, the second of granite, and one of the noblest bridges in the world—were nearly cotemporaneous in their erection. Waterloo Bridge was begun in 1811, and completed in 1817; Southwark Bridge was begun in 1814, and opened in 1819. Vauxhall Bridge, which is the farthest up the river of the strictly London bridges, was also built about the same time as the Southwark and Waterloo Bridges. It was begun in 1813, and finished in 1816. It consists of nine arches of equal span, in squares of cast-iron, resting on piers of rusticated stone.

New London Bridge was begun in 1824, and opened in 1831. Both it and Waterloo Bridge were opened with great ceremony and pomp—Waterloo Bridge on the anniversary of the battle of Waterloo, in 1817, by George IV., then Prince Regent, and the Duke of Wellington; London Bridge by the late King, William IV., accompanied by the present queen dowager. A statue to the Duke of Wellington is about to be erected in the "city," as an acknowledgment, by the citizens, of his exertions in facilitating the means of erecting new London Bridge.

The following table exhibits the relative proportions of the six London bridges, with other particulars, taken from Mr. Britton's work on the public buildings of London:—

—	Length.	Width.	Height.	Arches.	Span of Centre.	Materials.	Commenced.	Finished.	Architects.	Water-way. ft.
	ft.	ft.	ft.	ft.	ft.					
1 London, Old	930	20	40	19	70	Stone and rubble.	1176,	1209.	Peter of Colechurch	Above Starlings, 540; Below, 273.
Altered by Mr. Dance and Sir R. Taylor	—	48	—	20	—		—	—	—	—
2 London, New	920	56	55	5	150	Granite, &c.	Mar. 15, 1824.	Opened Aug. 1, 1831.	Sir J. Rennie.	690
3 Southwark	700	42	53	3	240	Iron.	Sept. 23, 1814.	1819.	Sir J. Rennie.	660
4 Blackfriars	1000	42	62	9	100	Portland stone.	June, 1760.	1770.	R. Mylne.	793
5 Waterloo	1326	42	54	9	120	Cornish granite.	October, 1811.	Opened March, 1817.	Sir J. Rennie.	1080
6 Westminster	1066	42	58	15	76	Portland stone.	January, 1739.	1750.	Labelye.	820
7 Vauxhall	809	36	—	9	78	Iron and granite.	May, 1811.	July, 1816.	James Walker	—

Of these six bridges three are open thoroughfares, and at three tolls are paid; and it so happens that one of each kind occurs alternately. The three open bridges are London, Blackfriars, and Westminster; and at all periods of the day they may be seen thronged by a multitude of passengers on foot, in carriages, and on horseback. At each of the other bridges there are toll-houses, with metal turnstiles attached to each. Connected with each turnstile is an index in the toll-house, by which the number of foot passengers can be distinctly ascertained during each day. The number of passengers on foot and horseback who use these bridges, though far from being inconsiderable, is yet very small when compared with the other bridges.

Waterloo Bridge affords the finest walk to be had in the heart of London. It is in the immediate neighbourhood of the thronged Strand; and on either side of it, at some little distance, Westminster and Blackfriars Bridges may be seen covered with an apparently never-ending crowd. But the toll (one penny for each foot passenger) keeps Waterloo Bridge free from the inconveniences of a thronged thoroughfare; and one can walk with ease and comfort along its level extent, and enjoy the fine perspective view of London which, by the sharp turn of the river, is here brought before the eye. The noble river front of Somerset House is close by the bridge; the dome of St. Paul's does not appear so vast as on Blackfriars Bridge, but the distance, which somewhat diminishes the idea of the size, "lends enchantment to the view;" and the towers of Westminster Abbey are seen rising above their surrounding objects. It is pleasant, on the close of a sultry day, to escape to Waterloo Bridge from the heated pavement and brick walls of Fleet Street and the Strand; and on such an evening the nervous or impatient man, panting for a breath of air, and who fancies that the very noise of the streets aggravates all his uncomfortable sensations, will doubly enjoy the breeze that ripples the surface of the river; and in marking how the setting sun touches dome, tower, and pinnacle with its varied hues, will even tolerate the now softened sounds that so lately irritated his nerves. Here, too, rather than on Westminster Bridge, where the sonnet is stated to have been composed, will be felt, in the calm of a summer morning, the force of Wordsworth's exquisite lines:—

"Earth has not any thing to show more fair:
Dull would he be of soul who could pass by
A sight so touching in its majesty:
This city now doth like a garment wear
The beauty of the morning; silent, bare,
Ships, towers, domes, theatres, and temples lie
Open unto the fields and to the sky,
All bright and glittering in the smokeless air.
Never did sun more beautifully steep
In his first splendour valley, rock, or hill;
Ne'er saw I, never felt, a calm so deep!
The river glideth at its own sweet will:
Dear God! the very houses seem asleep,
And all that mighty heart is lying still!"

A fine view of the river is obtained from the top of the York Column. Our engraving shows a part of it, but by varying the point of view, nearly all the bridges of London may be seen.

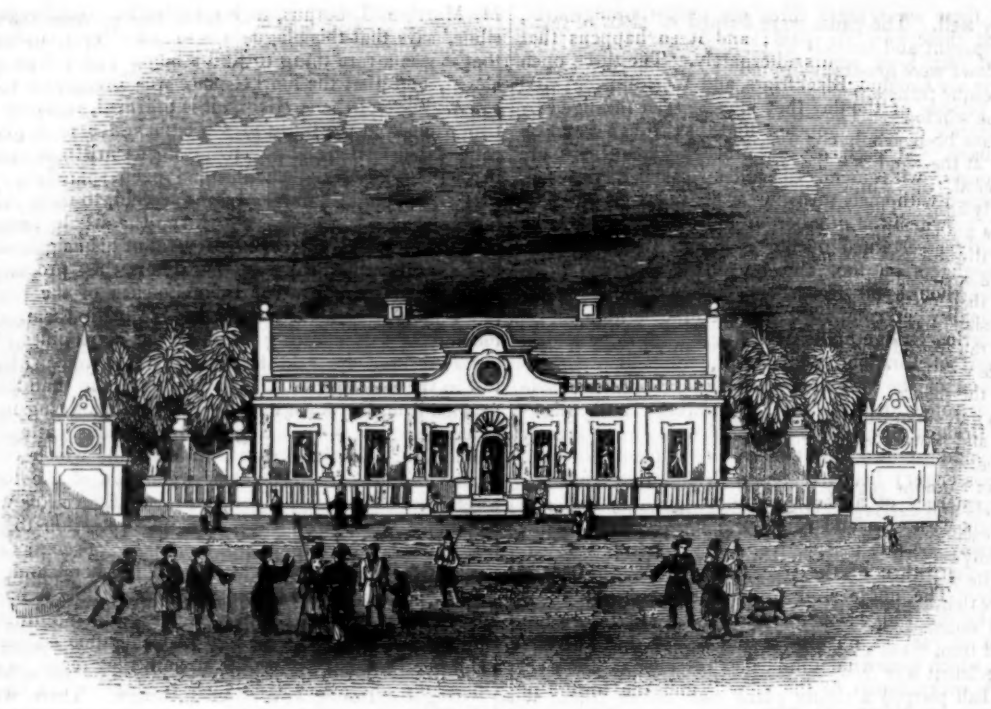
CELEBRATION OF CHRISTMAS AT GOLDBERG, IN SILESIA.

Christmas is probably celebrated in few places with greater solemnity than at Goldberg. The most remarkable feature in this festival is said to owe its origin to the plague which raged here in 1553; and which, according to an old inscription in the parish church of Goldberg, desolated this district, and carried off 2500 persons. Tradition says that only twenty-five heads of families survived; and all the houses being closed, they were altogether ignorant of the fate of their neighbours. M. Martinus Tabornus, in his 'Cladibus Goldbergensibus,' says that this plague was so exceedingly virulent, that it was a rare thing to find a house which was not closed, and that the market-place was overgrown with grass. One of the survivors, it is affirmed, repaired at two o'clock in the night of Christmas Eve to a place called Nieder-ring, and began singing a Christmas carol, in order to encourage such as had been spared by the plague, which was checked by the cold, to unite with him in celebrating a day so joyful to the whole human race. He was soon joined by several of his neighbours, and after they had sung another hymn, they proceeded to the Ober-ring, in order to invite such of the population as still remained there to sing with them. In memory of this affecting incident, the ceremonies still observed here are said to have been derived. About two in the morning of Christmas Day, more than 2000 persons from the town and the villages belonging to it assemble at the Nieder-ring, having previously attended the festivities in the Franciscan convent, which commence at midnight. The chief watchman of the town assembles his fellows, together with a *Ringcantor* who has a good voice, whom he leads in procession to the Nieder-ring, where they form a circle. As soon as the clock strikes two, the watchman cries the hour, and the singer commences the hymn, 'Unto us a Child is born,' in which he is joined by the whole assembled multitude and the inhabitants of the neighbouring houses, which are lighted up. After another hymn, they repair to the Ober-ring, where they again place themselves in a circle, and unite in various hymns. The whole is conducted with the greatest decorum, and is rendered peculiarly solemn and affecting, from being performed in a fine chant in the open air, and amid the gloom and silence of a winter's-night, while the houses all around are illuminated.

When this is concluded, there is a flourish of trumpets from the chief steeple, after which a full chorus joins in the hymn, 'To God alone be the Glory,' which is replied to by the multitudes assembled on the two Ringen. After various pieces of vocal and instrumental music, which terminate at four o'clock, there is a service in the Protestant parish church, where the well-known hymn *Quem pastores*, is sung by a full choir, divided into four bands. The church is, in the meantime, brilliantly illuminated by wax tapers, which are fixed in every direction. After the sermon, the *Te Deum* is sung, accompanied by horns and trumpets, and at six in the morning this nocturnal festival is concluded.

ICE PALACE OF ST. PETERSBURG.

"Imperial mistress of the fur-clad Russ,
——— no forest fell
When thou would'st build; no quarry sent its stores
To enrich thy walls; but thou didst hew the floods,
And make thy marble of the glassy wave.
* * * * * *
In such a palace Poetry might place
The armoury of Winter, where his troops,
The gloomy Clouds, find weapons; arrowy sleet,
Skin-piercing volley, blossom-bruising hail,
And snow that often blinds the traveller's course,
And wraps him in an unexpected tomb.
Silently as a dream the fabric rose;
No sound of hammer or of saw was there;
Ice upon ice, the well-adjusted parts
Were soon conjoin'd, nor other cement ask'd
Than water interfused, to make them one.
Lamps, gracefully disposed, and of all hues,
Illumin'd every side; a wat'ry light
Gleam'd through the clear transparency that seem'd
Another moon new risen, or meteor fallen
From heaven to earth, of lambent flame serene.
So stood the brittle prodigy; though smooth
And slippery the materials, yet, frost-bound,
Firm as a rock. Nor wanted aught within,
That royal residence might well befit,
For grandeur or for use. Long wavy wreaths
Of flowers, that fear'd no enemy but warmth,



[Ice Palace, St. Petersburg.]

Blush'd on the panels. Mirror needed none,
Where all was vitreous; but in order due,
Convivial table and commodious seat
(What seem'd at least commodious seat) were there;
Sofa and couch and high-built throne august.
The same lubricity was found in all,
And all was moist to the warm touch; a scene
Of evanescent glory, once a stream,
And soon to slide into a stream again."

The above beautiful lines from Cowper's 'Task,' though much more poetical than exact, are descriptive of that "most magnificent and mighty freak," the ice palace of the Empress Anne, which was erected at St. Petersburg in January, 1740. The following account with the engravings is taken from a detailed description of the edifice published at St. Petersburg in the year 1741, when all the circumstances relating to this extraordinary building were fresh in the memory of the writer.

After a pretty lengthy dissertation on the effects of frost and the qualities of ice, which has little to do with the matter in hand, the writer proceeds to panegyrise the noble Alexis Danilovitch Tatishchev, who originated the design of the Ice Palace, the Empress Anne who furnished the funds, and the Palace itself, which merited he says to be placed among the stars, to be transported to Saturn, the temperature of which distant planet would have been fitted, the writer thinks, to give it permanency.

The intention of the projectors of the Ice Palace was to build it upon the river Neva itself, in order to be as near as possible to the source from which the ice was to be procured. It was accordingly begun upon that river towards the end of the year 1739; but, says the author, "the ice of this river which sustains the weight of many thousand armed men; which supports great cannons and mortars, frequently discharged; which did not break under the immense weight of a fortress of ice and snow, attacked and defended according to all the rules of war, and taken at last sword in hand (which was performed seven years ago in a show represented before the Empress); this ice, I say, began to give way under the walls of the palace as soon as they were raised to some considerable height; whence it was easily concluded that it could not support the weight of the whole when completed." In consequence of this failure, it was resolved to begin again, and to build the palace on land: a site was accordingly selected between the Fortress of the Admiralty and the new winter residence of the Empress, and the work was begun with the advantage of the experience in ice building gained by the attempt on the river.

The manner of building was very simple; the purest and most transparent ice was selected: it was cut from the Neva in large blocks, which were then squared with rule and compass, and carved out with all the regular architectural embellishments. When each block was ready, it was raised to its destined place by cranes and pulleys, and an instant before letting it down upon the block which was to support it, a little water was thrown between the two, the upper block was immediately lowered, the water froze, and the two became literally one. The whole building in fact appeared to be and really was all of one single piece, "producing without contradiction an effect infinitely more beautiful than if it had been built of the most costly marble, its transparency and bluish tint giving it rather the appearance of a precious stone."

The dimensions of the building were in English measure, length 56 feet, depth 18 feet, and height including the roof, 21 feet. This is the body of the house; the palisading was 87 feet in length and 36 in width, and the actual length of the front view, including the pyramids at the corners, was 114 feet.

When the work was completed, the public were allowed an unrestricted passage through every part of the building. This at first caused a good deal of confusion, which was however obviated by surrounding the entrance with a wooden railing, and stationing police officers who allowed only a certain number of persons to pass in at one time.

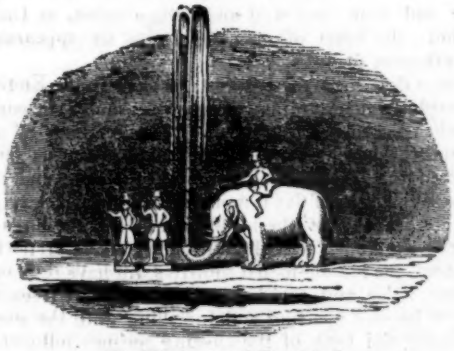
The façade was plain, being merely divided into compartments by pilasters. In each division there was a window, the frame-work of which was painted to represent green marble: it was remarked that the ice at the low temperature which prevailed took the paint per-

fectly well. The panes were formed of slabs of ice, as transparent and smooth as plate glass: at night these windows were generally lighted up, and most commonly grotesque transparencies painted on canvass were placed in the windows. The effect of the illumination is said to have been peculiarly fine, as the light appeared not only at the windows, but from the transparency of the material, the whole palace was filled with a delicate pearly light. The centre division projected, and appeared to be a door; but it was in fact a large window, and was illuminated like the others. An ornamental balustrade surmounted the façade of the building, and behind was the sloping roof with chimneys, in the usual style of Russian architecture. A handsome balustrade, all of ice, ran round the outside of the building. A large space was left for a promenade between the balustrade and the palace. There were also two entrances behind, with gates handsomely ornamented with orange trees in leaf and flower, with birds perched on the branches, all of ice.

Six cannons regularly bored and turned, with their wheels and carriages, stood before the balustrade, three on each side; these were of the calibre of such as usually receive three pounds of powder, but being of so fragile a material it was not considered safe to put in more than a quarter of a pound: the ball was of hard tow, well rammed in. Two or three times iron balls were fired from these cannons without bursting them. The experiment was tried in the presence of the court, and the ball pierced a strong plank two inches thick, at a distance of sixty paces. Two mortars stood on each side of the entrance; these were of the size of those which carry a shell of eighty pounds: when fired the charge of powder was the same as that for the cannons. On the same line stood two dolphins, which were made to throw a stream of inflamed naphtha out of their mouths, at night, by means of concealed tubes.

At the extremities of the rows of cannons, in advance of the balustrade, stood two pyramids surmounted with globes. They were raised on handsome pedestals, and had a circular window, around which a dial was painted on each of the four sides. They were hollow within, and could be entered by a door-way placed in the rear. A large paper lantern of eight sides, with monstrous figures painted upon them, was hung up in the middle of each pyramid and illuminated at night: a man was stationed withinside to turn about the lantern, and each of the figures on it presented itself in succession at the windows of the pyramid, to the great amusement of the multitude.

An elephant of the natural size was placed on the left side of the building, and on his back was a Persian,



[Ice Elephant and Fountain.]

holding a battle axe in his hand; two other Persians, one of whom held a spear, were placed in front of him. The elephant was hollow, and was made to throw water through his trunk to the height of twenty-four feet. This was done by means of tubes leading from the foss of the Admiralty near which it stood. At night burning naphtha was substituted for water, and the effect is said to have been very singular, the appearance being that of a stream of fire. To make this part of the exhibition more remarkable, a man was placed within the figure, who from time to time blew through certain pipes so as to make a noise like the roaring of an elephant. On the right of the house, at about the same distance as the elephant, a bath was built, made of round logs of ice, like the log baths used in Russia: "this bath," says our author "was more than once actually heated and used."

After describing the outside we come to the inside of this "great plaything." The entrance was behind, and the spectator was introduced into a spacious and handsome vestibule with one room on each side. There were no other rooms than these, so that they were sufficiently spacious, and as there was no ceiling under the roof they were also very lofty.

In one of these rooms which was the bed-room, there was a dressing-table fully set out with a looking glass, and all sorts of powder and essence boxes, jars, bottles, a watch, and a pair of candlesticks and candles, all of ice; the candles were sometimes smeared with naphtha and set in a blaze without melting. Before the table two little figures were placed as supporters, and against the wall a mirror was hung. In the other half of the room was the bedstead, with bed, pillows, and counterpane, finely-wrought curtains, and other furniture. There was a fireplace on the right, elegantly carved, and within were logs of ice, which were occasionally smeared with naphtha and set fire to. All the other parts of the room were fitted up in a corresponding manner.

The other principal room may be called either the dining or drawing-room: here was a table with a handsome time-piece, all provided with wheels of ice, which were visible through the transparent case. On each side were settees or sofas handsomely carved, and too large statues were placed in the corners of the room, besides other furniture.

Here ends the description of this immense toy, which was indeed

> ——— "transient in its nature, as in show
> 'Twas durable."

The writer of the account says "As long as the excessive cold lasted, that is from the beginning of January to the middle of March, so long did this remarkable edifice stand; it then began to give towards the southern side, and soon it gradually melted away. It was not altogether useless in its destruction, for the large blocks of the walls were taken to fill the ice cellars of the imperial palace:" a very poor return for an enormous outlay.

We learn from the same book that the Empress of Russia was not the only person who took advantage of the excessive cold of the year 1740. The same sort of amusement, though on an infinitely smaller scale, was taken by a German, named Von Meinert, who carved a large lion at the gate of Holstein in Lubeck, seven feet in length, and he did it so well, says the author, "that a skilful carver could hardly have done it better in wood." The lion was surrounded by a bulwark of ice, on which were placed five cannons, a soldier, and a watch box, all of ice.

The writer of the account endeavours to make some kind of apology for the large sums thrown away in this work, by observing that we have learned a good deal of the properties of ice from what was done; we know now, he says, that it can be turned and bored, and that gunpowder may be fired in cannons made of it. He says many persons have been sceptical as to the possibility of gunpowder taking fire; but continues he, "I have seen a little heap of powder which in the month of July was placed upon a piece of ice taken from an ice-

cellar, and which instantly exploded at the approach of a burning glass."

The book contains a list of the excessive frosts that have been recorded in Europe for 2000 years; this list is taken chiefly from the chronological work of Calvisius, and the writer fancies he sees in it that such extraordinary degrees of cold occur at intervals of thirty years, in which he is certainly not borne out by his own data.

In a little account of the frost, towards the end of the book, the following days are stated as those on which the cold was particularly intense.* From the 22nd to the 25th November; the five first days of December; and from the 16th to the 24th of the same month; from the 5th day of January to the end of February; from the 9th to the 11th; from the 12th to the 15th; and from the 19th to the 27th of March. The coldest day in the winter was the 5th of February, when the thermometer of the observatory stood at 30° below zero of Fahrenheit: on that day the barometer suddenly arose to 29·6 English inches.

A few experiments on the power of cold were tried. A glass of good French brandy exposed to the air on the night of 15th February was found covered with a crust of ice the next morning; the rest of the contents of the glass became of the consistency of soft wax. On the 13th December, a glass of water covered with two-thirds of an inch of nut-oil began to freeze in nineteen minutes, and soon became solid, but the oil was not affected. The snow was cleared away from a garden on the 25th of March, and the ground, which was hard as marble, broken through with much difficulty; at three inches depth it was found as soft as in summer; "the frost," says the writer, "having penetrated only so far;" we should certainly be more inclined to impute this fact to the wet having sunk no further.

The book concludes with a list of places at which the height of the thermometer was observed in that winter, with the degree below zero at which they descended at each place, and the name of the observer, when known. The thermometer is Fahrenheit's, and the dates are all changed to the new style.

Place.	Date.	Degree.	Observer's Name.
Dantzic	Jan. 10	10	Hanow.
Frankfurt	10	46†	
Hamburgh	10	8	
Hague	10	9	
Haarlem	11	1½	
Wittemburg	11	10	Viedler.
St. Petersburg	Feb. 5	30	Delille.
Berlin	7	9	Grischow.
Upsala	16	18	Celsius.
Basle	25	4	Bernouilli.
Leipsig	25	20	Müller.
Weimar	25	8	Libertus.
London, no day stated		8	

THE FORESTS OF AMERICA.

[From a Correspondent.]

THOSE who have never explored the primeval forests of America, can form but a very imperfect conception of the depth of the gloom and solemnity which everywhere pervades them. Save on some of the south-western ridges, such as intersect the great valley of the Ohio for instance, where, beneath the outspreading branches of the oak, the chestnut, the walnut, and the sycamore, you find spots of luxuriant herbage, and myriads of bright and beautiful flowers, all the rest of the interminable woods that I ever, in my devious rambles, have explored, are wholly destitute of herbage, yielding neither grass nor flowers. Wherever you tread, the surface of the ground is thickly strewn with decayed and decaying leaves; and dead branches, of various shapes and sizes, are daily toppling down from the lofty stems to which they have belonged. And though the winds may rage, and the storm may beat, in the tops of the tall forest-trees, yet there reigns an everlasting stillness near the surface of the earth; not a breath of air is there to stir the light and withered leaves: where they fall, there they are suffered to moulder and decay. The boundless covering of crisp and brown leaves becomes partially enlivened by the green of the young seedlings, which spring up by thousands during the summer season; but as the all-vivifying influence of the glorious orb of "light and life" cannot reach their lowly condition, for the most part they pine and die, their places being supplied with another crop of these "annuals" each succeeding summer.

It would be tedious to enumerate all the varieties of timber-trees found in the vast wildernesses of America; yet there is, in almost every section of the country, some predominant species, from which the woods acquire their appropriate name and character. The chief of these may be comprised in the four following, namely,—oak-woods, beech-woods, pine-woods, and cedar-swamps, or barrens. All these forests are gloomy, but they have their comparative degrees of depth of shade: the oak-woods being the least dark, because of the trees standing further apart; the beech-woods in the next degree; and then comes the sullen pine; and, lastly, the sombre cedar. When the sun is in its meridional summer splendour, a quiet, chaste, and mellow light is admitted through the veil of pale green and semi-transparent foliage of the oak and beech woods. At that season, too, a few, but only a very few, summer-birds frequent forests of this character; and whose song, if song they have, is wild, monotonous, and melancholy. Occasionally, the ear is startled by the loud tapping of some industrious but unmusical woodpecker; and even in the depth of winter, its rapid hammering may be heard from afar,—for some of the more hardy varieties of the woodpecker tribe do not migrate at the approach of the most inclement seasons. Besides the few birds that usually frequent these forests, they are inhabited also by playful squirrels, of three or four varieties; their haunts, however, being generally confined to those tracts of country where mast and nuts are in the greatest abundance; for in all the northen regions of America they have to store up provisions during the summer and autumn, on which they have to depend for a subsistence through a long and rigorous winter. I have already enumerated all of animated nature that tends to lessen the gloom and loneliness of the oak and beech woods; for the larger animals which are found there are but rarely seen; and from their wild and savage habits and dispositions, the heart of man can derive no pleasurable sympathies or feelings.

I have described these forests as they appear to him who explores them during the sunny season of summer; but when the early frosts have seared the foliage of the oak and the beech,—and the autumnal tempests have scattered the leaves of the walnut, the ash, and the maple,—the light of day is more freely admitted through the lofty branches of the forest trees. But the birds of summer are gone; and should the season be pretty far advanced, the nimble-footed squirrels will have retreated to their holes and cavities in their favourite trees, no more to be seen sporting and frolicking until the warm and congenial suns of the ensuing spring shall awake them to renewed life and activity. Even the larger wild animals will have become more scarce by the time that winter has fairly set in, for some of them will have gone into their retreat, and have become torpid; and those that remain, being now able to discover man's

* In these dates the old style has been altered to the new.

† This the writer very properly suspects to be erroneous.

approach at a greater distance, in consequence of the foliage no longer impeding the view, seldom suffer themselves to be closely approached. The winter snows lie smooth and unruffled in the wilderness, save where is seen the trail of some stalking deer, or the track of some prowling fox or wolf. In the mountainous districts you occasionally come upon the foot-prints of the American panther; and in some of the western regions the traveller will have an opportunity of remarking upon the trails of small herds of elk that have crossed his forest-path.

I come next to speak of the pine woods, and although they are not so common as the "green woods," as those already described are familiarly called,—yet there are millions of acres of forest, where pine, of two or three sorts, is the only, or at all events the generally prevailing timber. When the summer sun is in its full power and splendour, the light, if light it may be called, in the pine woods resembles faint and dubious twilight. This greater degree of obscurity is caused, partly by the darker and more impervious nature of the foliage, and partly in consequence of the pine-trees growing closer to each other than other forest trees generally do. Neither is there any season of the year in which the trees are bare; much of the winter snow lodges on their branches, and that which finds a passage to the earth seems to have been deprived of all its native purity in the gloom of the recesses where it reposes. As regards the loneliness and melancholy of these regions, summer and winter are nearly alike; for during the season that rejoices all other parts of the creation, no summer bird resorts to the pine-clad regions to build its solitary nest, or chaunt its simple song of happiness and love. Scarcely a busy woodpecker is to be heard (seeing one is out of the question); and as for squirrels, they find no business there; except in their migratory excursions instinct should happen to guide them through some section of a pine forest. The bird most commonly found there is the New England partridge, or the Virginia pheasant; but even these are scarcer than they are in the more cheerful "green woods" of various parts of the country. It may be observed that the pine forests are considerably taller than any of the rest; probably 160 feet would be below their average height; and although so very tall, the trees are seldom more than two feet in diameter, in consequence of their growing in such close vicinity. In the green, or summer woods, you frequently fall in with a few straggling pine trees, growing up amongst the light green foliage to the height of sixty or seventy feet above all the surrounding forest trees; standing like sentinels set to watch over all the silent wilderness. And when one has an opportunity of looking down upon the surrounding woods from some lofty and abrupt eminence, the whole country appears covered with brushwood or shrubbery, with here and there a pine tree of moderate size shooting up from the midst of it. The white pine forests are the most general, as well as extensive, in the northern regions of America.

The cedar-woods are commonly confined to swamps; but they occasionally intervene on mountain ridges, where the soil is miserably poor; and, the trees attaining but a small size, such situations are called cedar-barrens. There are also oak, as well as pine-barrens, in various parts of the country. The pine-woods, as already stated, are dark and gloomy; but the cedar-swamps are still more dismal. Although they are seldom of great extent, to be under the necessity of traversing a few miles of these swamps is no ordinary undertaking; for, in many situations, the cedars grow so close to each other, that there is barely space for a man's body to squeeze through between them. And taking into the account the nature of their dark-green foliage, some idea may be formed of the gloom and melancholy which for ever pervade the cedar-swamps. Some of them are of so boggy a nature, that it is with extreme difficulty they are explored by man; and as the heavens are entirely shut out, the compass is absolutely necessary to direct the wanderer in the right way; and even this can hardly be trusted to as a sure guide, for there is not sufficient light upon all occasions to enable him to ascertain the quarter to which the needle points. One of the most extensive cedar-swamps known at present is the Dismal Swamp in Virginia; the length of which is upwards of thirty miles. In the interior of Canada these swamps abound more than they do in any other section of the country with which I am acquainted; and notwithstanding the contiguous lands may be of the very best quality of soil, at the present day these swamps are utterly worthless. It is mostly the white cedar that grows in them, but the trees do not attain a great elevation, neither are they bulky, since very few of them exceed twelve or fifteen inches in diameter. Were other sorts of timber more scarce, white cedar would be in greater demand: at present, where it can be got to market at a moderate expense, it is used for laths, staves, and shingles. There is, if possible, a smaller portion of animal existence in these dreary regions, than in the desolate pine-woods; for if we except the millions of mosquitoes that these swamps give birth to, scarcely is there aught that "lives and breathes" within the dark precincts of the cedar-woods.

There are some remarkable natural phenomena in the forests of America, two or three of which I will briefly notice; but as I have never heard what I consider satisfactory arguments advanced to account for their existence, I shall forbear hazarding any opinions of my own. In journeying through the interior of the country where the forest has been little, or not at all, encroached upon by the axe of the woodman, you will often, after travelling for two or three days through regular pine-woods, suddenly and unexpectedly find yourself in woods of a perfectly distinct and dissimilar character. This, in itself, is nothing extraordinary; but if you will take the trouble to examine a little into the matter, you will then find that there is no visible natural reason for this change—since, for all that you can discover, the soil, and all that is therewith connected, is precisely of the same character and quality on both sides the line which marks the change of timber. At other times a small and insignificant stream will form the line of demarcation, but if you examine you will find that there is not any change or new arrangement in the mineral kingdom between one side of the stream and the other. These changes, when they do occur, are seldom of small extent, for you often find them running directly through regions of country for scores or hundreds of miles, everywhere showing the division line with a remarkable distinctness. And in those changes it is not only the leading character of timber which gives place to some other equally distinctive and prevailing; but the few inferior trees and shrubs are superseded by another set of secondary trees and shrubs, of a perfectly distinct order and character. Often from some lofty acclivity have I stood gazing upon these dividing lines of the vast and wonderful timber-crops of the American primeval forests! when I could trace the divisions as accurately and distinctly as I could in my own grain-field, where a single furrow was the line of division between a crop of full-eared wheat on the one hand, and of the more plebeian oats on the other. In this case I knew the cause; for I had said there shall be wheat here, and oats there, and it was so; because the proper and necessary seed was committed to the ground, and the respective crops sprang up accordingly.

In the new settlements my agricultural pursuits have sometimes led me to witness changes which seemed

altogether, to me, inexplicable. I will mention one of the instances to which I allude; and having related what I myself witnessed, and made a few observations respecting the situation where it took place, I will then leave the matter to be accounted for and explained by the learned in Nature's secrets—if they can. During the winter season the whole of the timber was cut down upon a piece of ground containing about twenty acres. This was in what was generally called the Beech Woods, from the major part of the timber being beech; but where there were also small quantities of maple, birch, ash, &c. During the following summer fire was applied to this "chopped fallow," as the prostrate timber is called; and in the course of an hour all the dead leaves, the decayed timber, and the smaller branches of that which had been standing the previous year, were entirely consumed. Circumstances occurred which prevented the remaining trunks of the trees from being rolled together, in the usual way, and burned; so that in the condition described, this twenty-acre field was permitted to remain for several years. After the lapse of a year or two, the whole field became a plantation of young wild cherry-trees, although I am not aware that a single cherry-tree was growing on the spot, or near it, at the time the timber was cut down. Some few of this species of cherry-tree were to be met with in various parts of the surrounding woods; but it was altogether an exceedingly scarce sort of timber. During the first and second year of the growth of this young cherry plantation, I took considerable pains in searching for the cherry-stones (if such there were, or ever had been,) by pulling the seedlings up by the roots, and then examining the soil as minutely and carefully as possible. But for all my labour and research, I was not rewarded by the discovery of a single seed or stone! Had the young trees been left unmolested, here was a piece of ground, containing twenty acres, that would, in the course of forty or fifty years, (for this species of cherry is of rapid growth) have become a perfect forest of cherry-trees to that extent. Now permit me to ask, is it probable that birds—for I have previously stated that very few inhabit the wilderness, should have brought hither all the cherry-stones from which so many thousand seedlings (I have no other name by which to designate them) sprung up in this identical spot? Or is it possible that all those young trees should have sprung up without there being any seed (cherry-stones) in the ground at all? And supposing they were there, from whence, or when did they come?

On other occasions I have known oaks and hickories, and maples cut down, and instead of their places becoming supplied by a new generation of their own particular species, after the ground has been left uncultivated for a few years, a general and full crop of young pine-trees has sprung up. Now here again, who or what could have brought the cones of some distant pine-tree to this particular spot? And if they had been brought, was it by mere accident that they were strewn so regularly over the whole surface?

Far into the interior of the continent of America, in the midst of immense tracts of forest, you sometimes fall in with small openings,—patches of ground from which the Indians, or the early fur-traders, have taken away the timber, or perhaps consumed it on the spot. In some instances these places will be overgrown with immense briers and brambles; but occasionally grass will have sprung up, and there you may find as luxuriant plants of the common white clover as are to be met with in any part of our own island, or even in the rich pastures of Holland. Here again is a dilemma. Either birds or beasts (and none but wild ones have ever been there!) must have brought the seed, or else it must have lain dormant in the soil, for I know not how many centuries, or the soil must have produced it spontaneously. I have stated these things precisely as they are; and all that I shall advance upon the subject is, that I know them to be facts.

When trees tumble down in the forests through absolute age and decay, their places are generally supplied by saplings, that have long been struggling in the shade near them, either of their own or some other species. But when a chestnut-tree falls its place is commonly filled by one of its own kind; for a number of sprouts shoot up from the root of the parent while it is still standing, one of which taking the lead of the rest, grows up in due time into a forest tree; while the rest of them droop and die for want of proper aliment. I have been able to trace distinctly three or four generations of the chestnut; for, owing to its decaying so slowly, the old fallen trees do not wholly disappear until their children and grand-children have grown up, flourished, languished in old age, and at last fallen beside them.

There are now two weekly newspapers published in the Society Islands, in the native or Sandwich language, one called the *Ke Kumu Hawaii*, or Hawaiian Instructor, has arrived at its thirteenth number. It is published at Honolulu, the capital of the island of Oahu. The other is called *Lama Hawaii*, or the Hawaiian Luminary, published in the island of Nawi, an island containing 35,000 souls. Both publications are conducted by American missionaries. The articles of news are of various kinds, chiefly of a moral and religious character.—*Hobart Town Courier.*

Origin and Progressive History of Coal.—Few persons are aware of the remote and wonderful events in the economy of our planet, and of the complicated applications of human industry and science which are involved in the production of coal, that supplies with fuel the metropolis of England. The most early stage to which we can carry back its origin was among the swamps and forests of the primeval earth, where it flourished in the form of gigantic calamites and stately lepidodrenda and sigillariæ. From their native beds these plants were torn away by storms and inundations of a hot and humid climate, and transported into some adjacent lake or estuary or sea. Here they floated on the water, till they sank saturated to the bottom; and being buried in the detritus of adjacent lands, became transferred to a new state among the members of the mineral kingdom. A long interment followed, during which a course of chemical changes and new combinations of their vegetable elements have converted them to the mineral condition of coal. By the elevating force of subterranean fires, these beds of coal have been uplifted from beneath the waters to a new position in the hills and mountains, where they are accessible to the industry of man. From this fourth stage in its advances, our coal has again been moved by the labours of the miner, assisted by the arts and sciences that have co-operated to produce the steam-engine and safety-lamp. Returned once more to the light of day, and a second time committed to the water, it has, by the aid of navigation, been conveyed to the scene of its next and most considerable change, by fire; a change during which it becomes subservient to the most important wants and conveniences of man. In this seventh stage of its long eventful history, it seems to the vulgar eye to undergo annihilation; its elements are indeed released from the mineral combinations they have maintained for ages, but their apparent destruction is only the commencement of new successions of change and activity. Set free from their long imprisonment, they return to their native atmosphere, from which they were absorbed to take part in the primeval vegetation of the earth. To-morrow they may contribute to the substance of timber in the trees of our existing forests, and having for awhile resumed their place in the living vegetable kingdom, may, ere long, be applied a second time to the use and benefit of man. And when decay or fire shall once consign them to the earth or to the atmosphere, the same elements will enter on some further department of their perpetual ministration in the economy of the material world.—*From Professor Buckland's Bridgewater Treatise.*

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